The Samworth Church Academy

Curriculum Journey: Information Technology (IT)

Year 7

Autumn	*My Digital World* Passwords, email, Office 365 & e-safety. *Search engines and legislation* Searching the internet safely, validity of information and developing understanding of e-safety and online threats.
Spring	*PowerPoint* Consistent design and developing a master slide. *Word* Proficient use of of Word from basics to more advanced features such as mail merge.
Summer	*Spreadsheets* Software and key language, basic functions and formulae. *Databases* Databases in modern applications, create a databse consisting of multiple tables.

Year 8

Autumn	*Intro to Computers* Input and output devices, CPU, storage and memory. Comuter components and how they work *Computational Thinking* Independent problem solving, decomposition, pattern recognition and algorithms
Spring	*Scratch* Basic programming using Scratch. *Python* Evolving their skills into a higher level programming language.
Summer	*Cryptography* History of codes, develop skills in using ciphers. *Cyber Security* Social profiling, engineering, ransomware and malicious code.

Year 9

Autumn	*Photoshop* Introduction to Photoshop and the ethical issues arising from using it. *Data Representation* How computers work from the ground level, 1s and 0s. Exploring binary numbers.
Spring	*Illustrator* Using Illustrator to create vector graphics and where they can be applied. *Networks* Benefits of networking, how data is transferred, hardware required.
Summer	*Animation* Developing knowledge and skills, both interactive and non-interactive. *Ethical, Environmental & Legal Issues* Laws that have an impact on computing, difference between law and ethics.

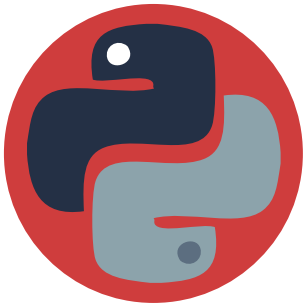
Year 10

Autumn	*Systems Architecture* Performance impact, Von Neumann architecture, embedded systems. *Memory and Storage* Storage components, volatile and non-volatile storage.
Spring	*Data Representation* Binary number system, hex number system, ASCII and Unicode. *Logic* NOT, AND, OR gates, draw simple and complex diagrams.
Summer	*Systems Software* Exploration of software, operating software and utility software. *Ethics, Law and Environmental Issues* Real world examples, such as medical uses for technology, privacy, Data Protection and the Computer Misuse Act.

Year 11

Autumn	*Networks* Types of networks, performance factors, client and peer-to-peer networks. *Network Security* Threats, forms of attack, preventing vulnerabilities and security.
Spring	*Algorithms* Abstraction, decomposition, logic, algorithms and data representation. *Programming Fundamentals* Sequence, Selection and Iteration. Use of variables and other data structures (e.g Lists) and the purpose of functions and procedures
Summer	*Revision*

GCSE



A Level

Year 12

Autumn	To provide students with a sound understanding of IT technologies and practices. The information learnt in this unit will create a solid foundation in the fundamentals of hardware, networks, software, the ethical use of computers and how businesses use IT.
Spring	Data/information in the public domain, globally, in the cloud and across the internet, by individuals and organisations. Students will look into why good management of both data and information is essential, and how good data management can give organisations a competitive edge.
Summer	Students will explore potential ideas for a new application and develop the fundamental design for it. Students will then develop the designs for an application and how users will interact with it.

Year 13

Autumn	Students will continue to work on their mandatory unit.
Spring	Students will build upon their mandatory unit and expand their prototype application into a full functioning application. The purpose of this unit is to prepare students to undertake product development activities.
Summer	Digital marketing as a concept and then offers students the opportunity to explore the possible impacts, both positive and negative, that may be generated by the use of social media as a digital marketing tool.

Full Overview

IT

Year 7

Autumn	Spring	Summer
My Digital World Students will be assessed on prior skills, knowledge and learning experiences from KS2 to establish their current ability in order to support the transition process and the ICT & Computing curriculum. Students are educated on the safe use of technology in their digital lives, as they become frequent users of social media and the Internet. Topics covered include password security, Email/respectful communication, Use of Office 365 and E-safety. **Search Engines and Legislation** Students will learn to search the internet safely. They will learn how to determine the validity of the information they find and discover efficient searching techniques while developing their understanding of e-safety and online threats.	**PowerPoint** Students will learn how to present information that is fit for the purpose and audience by creating consistent designs within a master slide. The skills that they obtain will help them across the academy. **Word** Students will learn how to proficiently use work from the basics to more advanced features such as mail merge. Again these skills that the students obtain will help them across the academy.	**Spreadsheets** Students introduced to Spreadsheet software and key language. Students understand the purpose and use of basic functions and formulae, including the importance of BODMAS and how to use cell references and cell ranges correctly. Students will choose, create and interpret basic charts and graphs. **Databases** Students will understand the role of databases in modern applications, specifically how they are used in conjunction with other web technologies. They will create a database consisting of multiple tables and learn how to produce queries and reports.

Full Overview

IT

Year 8

Autumn	Spring	Summer
Intro to Computers Students will learn about input & output devices, the CPU, storage and memory. Students will explore the components that make up a computer and how they work together to function in terms of the fetch, decode and execute cycle. **Computational Thinking** Students will begin to develop their ability to problem solve independently; using decomposition, pattern recognition, abstraction, and algorithms. These are the pillars of Computer Science and provides a good foundation for other KS3 units and KS4 Computer Science.	**Scratch** Students will begin to learn key programming concepts using Scratch, a visual programming language; including sequencing, selection and iteration. This is an introduction to a block-based programming environment to understand the fundamentals of code. Students will also learn how a variable is used along with decisions and selection. **Python** Students will build upon their scratch block based environment into a high level programming language. Students will learn how an IDE works in order to aid coding and learn how to debug programs.	**Cryptography** Students will investigate the history of codes and understand how cryptography has been used in history. They will understand the need for cryptography today. They will develop skills in using a variety of ciphers. E.g., Caesar cipher, enigma machine Bletchley Park, Pig Pen, Vigenère, Atbash, Morse Code, NATO/Phonetic alphabet. **Cyber Security** Introduction to cyber security and the issues that we are faced on a day-to-day basis when working online. Students will learn about social profiling, engineering, ransomware, and malicious code.

Full Overview

IT

Year 9

Autumn	Spring	Summer
Photoshop Students will gain an introduction to digital artefacts for photoshop. They will understand that ethically photoshop can be used maliciously and they are constantly surrounded by digitally enhanced imagery online and in print. Students will learn the key elements of the software and learn a basic knowledge of editing. **Data Representation** Students will explore how a computer works from the ground level, 1s and 0's. Students will explore the binary number system and be able to transpose between denary the and binary number systems. Expanding on this, students will understand that everything that they do on a computer is stored as a 1 or a 0. They will look at how this works for images, text and sound.	**Illustrator** Vector graphics can be used to design anything from logos and icons to posters, board games, and complex illustrations. Through this unit, students will be able to better understand the processes involved in creating such graphics and will be provided with the knowledge and tools to create their own. **Networks** As networks have evolved, society has become increasingly reliant on the services that they provide. They have changed the way we learn, work, play, and communicate. This unit begins by defining a network and addressing the benefits of networking, before covering how data is transmitted across networks using protocols. The types of hardware required are explained, as is wired and wireless data transmission. Learners will develop an understanding of the terms 'internet' and 'World Wide Web', and of the key services and protocols used.	**Animation** Students have the opportunity to develop their knowledge and skills in a highly creative field of study. Whether it be fully fledged animation production or animations that form the basic transition structure for our websites and games. You are only limited by your imagination. **Ethical, Environmental and Legal Issues** Students will understand that there are several laws that govern the use of computer systems and data. However, ethics is about good practice and behaving in a morally correct way. Ethical actions are different from lawful actions. Sometimes actions can be legal, but are they ethical.

Full Overview

Computer Science

Year 10

Autumn	Spring	Summer
Systems Architecture Students will develop their knowledge further of the CPU and factors that can affect the performance and they will explore the Von Neumann architecture and how the CPU fetches, decodes and executes data. Students will then understand what an embedded system is. **Memory and Storage** Students will further their knowledge of primary and secondary storage components. They will explore the need for volatile and non-volatile storage. They will examine similarities and differences between various secondary storage media including, magnetic, optical and SSD and be able to discuss these in real life situations.	**Data Representation** Students will draw on their previous knowledge of the binary number system. They will learn how to follow the hex number system, further binary addition and how binary shifting impacts on the number. Students will then learn the need for ASCII and Unicode. **Logic** Students will learn the basics of NOT, AND, OR gates and be able to draw simple and complex diagrams. Once students are able to draw and understand logic gate diagrams they are able to understand how to draw truth tables associated with given diagrams.	**Systems Software** An exploration of different software that computers use. Students will examine Operating software and understand the need for Utility software. They will focus on areas such as, user interface, multitasking, file management, user accounts, compression, defragmentation and encryption software. **Ethics, Laws and Environmental Issues** Students will gain an understanding of ethical, cultural, and environmental issues. They will develop an understanding of real-world examples, such as medical uses for technology, privacy etc. Students will then learn how various impact the technological world we live in today such as Data Protection and the Computer Misuse Act.

Full Overview

Computer Science

Year 11

Autumn	Spring	Summer
Networks Students will develop their knowledge further from KS3 around networks. They will develop an understanding of the types of networks and the factors that can affect performance, client and peer to peer networks. An exploration of mode of connections, encryption and the use of IP and MAC addressing will be looked into along with protocols and the concept of how layers operate. **Network Security** Students will complete the topic of networks by focussing on threats posed to them and the various forms of attack. They will then identify and examine how users / organisations can prevent vulnerabilities and make recommendations to how best secure their ICT systems.	**Algorithms** Students will start to understand and apply fundamental principles and concepts of computer Science. This includes abstraction, decomposition, logic, algorithms and data representation. It will also encourage learners to analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging problems. Learners are trained to think creatively, innovatively, analytically, logically and critically. **Programming Fundamentals** Students will continue to explore the key concepts of programming - Sequence, Selection and Iteration. Use of variables and other data structures (e.g Lists) and the purpose of functions and procedures along with applying defensive design principles.	**Revision** Students will consolidate their learning of GCSE Computer Science for their upcoming examination. They will have the chance to examine past papers and mark schemes.

Full Overview

Cambridge Tech Level 3 in IT

Year 12

Autumn	Spring	Summer
To provide students with a sound understanding of IT technologies and practices. The information learnt in this unit will create a solid foundation in the fundamentals of hardware, networks, software, the ethical use of computers and how businesses use IT.	This unit focuses on the uses of data/information in the public domain, globally, in the cloud and across the internet, by individuals and organisations. Students will look into why good management of both data and information is essential, and how good data management can give organisations a competitive edge.	The world is increasingly reliant on applications that help individuals, businesses and organisations achieve specific activities or purposes. In this unit students will explore potential ideas for a new application and develop the fundamental design for it. Students will then develop the designs for an application and how users will interact with it. The application that students design can be for any sector and for any purpose. Students will have the opportunity to present students ideas, prototype them, and gain feedback before refining students' design. Besides the technical knowledge that students will gain about designing an application, students will also learn key transferable skills such as liaising with clients, questioning people effectively to gain the information students need to develop successful designs, and presenting students ideas to an audience and getting feedback from them. This unit is mandatory to the application developer specialist pathway in the Level 3 Diploma suite of qualifications as it supports the development of skills, knowledge and understanding appropriate to a wide range of job roles requiring the development of applications in mobile technology, business software, graphics, game and web design.

Full Overview

Cambridge Tech Level 3 in IT

Year 13

Autumn	Spring	Summer
Students will continue to work on their mandatory unit.	Students will build upon their mandatory unit and expand their prototype application into a full functioning application. The purpose of this unit is to prepare students to undertake product development activities. Students will learn about different product design methodologies and the role of the product development life cycle. In addition, students will discover the factors that influence product developments. The key to any product development being a success is the analysis, client review, design, testing and final acceptance that takes place. The skills students will learn can be applied to the development of any product, large or small. Students will use product development skills and work through the product development life cycle.	The use of social media has increased massively over recent years and is now a worldwide phenomenon. Users of social media are able to share ideas and files, compare opinions and pass comment on the activities of their friends and contacts. In doing so, they are not only generating huge amounts of data about themselves, but also allowing others the opportunity to contact them and monitor some of their online activities. Social media also allows users to collaborate with others across the globe. Digital marketing is part of the overall process of marketing and is the use of digital media to increase awareness of a product or service. As social media offers such a wealth of data and the ability to contact potential customers in their own homes across a range of media channels, it is only natural that digital marketing seeks to use social media as part of the marketing mix for goods and services. This unit looks at digital marketing as a concept and then offers students the opportunity to explore the possible impacts, both positive and negative, that may be generated by the use of social media as a digital marketing tool.